



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE LEGAL PROBLEMS OF RECLAMATION OF LANDS BY MEANS OF IRRIGATION

BY MORRIS BIEN,

Supervising Engineer, U. S. Reclamation Service, Washington, D. C.

Although irrigation, as applied to the individual dealing with his land, is new to the Anglo-Saxon race, it must have been an early form of agriculture. The earliest traces of civilization are in the arid region of Asia, where men found that, except in a few favored localities, it was impossible to raise crops without applying water to the land. Accordingly, we find in Asia evidences of irrigation work done at an early period and involving great labor and some degree of engineering skill. In Egypt, likewise, there are indications of massive work requiring an enormous amount of labor and the transportation of great quantities of material for long distances. The earliest records contain references to irrigation and the laws of the remotest times of which we have knowledge allude to irrigation matters and regulate various features of irrigation practice.

The Anglo-Saxon race first encountered the subject of irrigation from an administrative standpoint in India; and the enormous development of irrigation works in recent years in that country is a monument to the energy of the British nation. So also in Egypt the British Government has taken hold of the irrigation question and has added wonderfully to the possibilities of development in that country.

In Europe irrigation was introduced in the early stages of civilization, and when the discoverers reached the continent of America they found evidences that irrigation had been practiced for many generations. In the southwestern part of the United States there are ruins of ancient irrigation works and some of their sites are being used for the modern construction carried on under the auspices of the United States Reclamation Service.

The gold miners of California were early confronted with the problem of determining the right to the use of water, because the gold mining involved the large use of streams of water under heavy pressure to break down the hillsides and carry the dirt away into

sluices where the particles of gold were deposited and afterwards collected. The right to the use of the water became an important matter and the expense of carrying the water from the streams to the place of use soon made it necessary for the mining population to adopt a set of rules to regulate the rights of those who used the water. These rules were early embodied in the laws of the state of California, and soon became the subject of litigation in the courts.

Not many years passed before the regulation of water appeared in Federal legislation. Gradually, with the development of the West, the water question became of importance in each section of the country. Usually the mining interests were the main ones to be protected, but before long the interests of agriculture became of sufficient importance to require some form of legislation in order to provide for the use of water upon lands for raising crops.

The legislation of California, although not well adapted to modern needs, being the earliest, naturally was the model for the other states and territories. The first great departure from the form of the California statutes is found in the legislation of Colorado. This system was for many years considered to solve the problem, but with the large development of rights and with the complexity introduced by the use of water to such a great extent as to leave but little or no excess, the difficulties to be overcome were increased, and we find in the legislation of the state of Wyoming, adopted in the year 1880, a development of legislation towards the form now regarded as the best practice.

THE LEGAL PROBLEMS INVOLVED

Land Problem

The legal questions arising in connection with irrigation involve problems both of land and of water. The application of water to land for the raising of crops soon developed the need for more care in agriculture and soil cultivation. The cost of securing the water and putting it upon the land makes it evident that the water must be used effectively in order to secure profit from the great expenditures involved. The realization of this idea encouraged the more intensive forms of cultivation. With intensive cultivation it soon becomes manifest that a small tract of land is sufficient for the sup-

port of a family, and that the cultivation of large areas under one ownership by irrigation is a form of monopoly not in the public interest and not to be tolerated any longer than is absolutely necessary. In irrigated countries experience shows that the large irrigated farm is difficult to handle and that the interest of the public is greatly promoted by small holdings sufficient for the support of single families.

Fortunately this situation has not required legislation in order to secure a proper distribution of the lands among those who can themselves use and get the benefit of them. The normal conditions are such that it is usually impracticable to practice irrigation on a large scale on a single farm. The problems of labor on a great farm in the more sparsely settled parts of the country are insuperable. In order to handle an irrigated crop a large amount of labor is required, especially in the case of products of great value, such as berries, small fruits, orchard fruits, hops, etc.

The subdivision of holdings in irrigated countries is a problem which seems to settle itself without the intervention of law and without requiring intervention on the part of the people. Statistics have been gathered in a number of cases in order to show the effect of natural processes upon the subdivision of irrigated lands into small holdings. In a small irrigation community in the vicinity of Oakley, Idaho, an investigation made in 1904 showed that in a tract of about 8500 acres the average size of the irrigated farm had decreased from 141.5 acres to 60.4 acres in a period of fourteen years.

Water Problem

The problem of the water supply is one that has confronted humanity from the earliest times. The difficulty is to guard against monopoly. The Anglo-Saxon carried with him to the arid West the riparian doctrine of the English common law as brought to the eastern part of our country from England. Riparian rights as understood under the old common law were that each individual who owned land along a stream was entitled to have that stream pass by his land without impairment in quality or quantity on account of any use by those living above. Manifestly it was impossible to maintain this principle in a country where the artificial application of water to land was necessary in order to raise crops. It became

necessary both to adopt a rule that the right to water for irrigation should depend upon actual use, and to modify the common law so as to protect the persons who first used water for irrigation purposes as against those who might desire to take water from the same source of supply at a later date; in other words, to protect the prior appropriator of the water against the subsequent appropriator.

The forms of legislation which arose from the earlier practice, and which were adopted because most suitable, provided that notice of a man's claim should be given to all parties interested by posting some evidence of it at the point of diversion from the stream. The legislation first adopted in California provided that the right to the use of water should be evidenced by a notice of appropriation posted at the place of diversion from the stream and that a copy of this notice should be filed in the county records within sixty days. It was natural that the amount of water claimed should be as large as possible, and the practice for many years was to limit the amount of water claimed only by the imagination of the person filing the notice. This continues to be the rule in those few states where this ancient plan remains in force.

In many cases the notices filed, appropriate many times the maximum flow of streams even in flood stages. In fact, many judicial decisions can be found among the earlier cases, and even within recent times, in which the court has solemnly decreed to each of several individuals a right to take from a stream an amount of water far in excess of that which the stream ever carried, and adjudging to one or more of the parties the right to take from the stream more water than could possibly flow in the stream.

Beneficial Use

To meet the tendency to monopolize the water supply the laws of the states and the decisions of the courts early recognized the fact that the right to the use of water must depend upon beneficial use. Consequently there is a series of laws and decisions attempting to establish this basis; and many cases might be cited of attempts to control the water supply for future use by some form of seeming compliance with the law.

One case is found in the decisions of the California courts where a man diverted water from a stream and used a part of the water for the irrigation of his lands and for the raising of crops. He ap-

preciated the value of the water and accordingly took steps to secure for future use the water he might need for the rest of his land, turning the excess water supply on land which he did not then wish to cultivate. His idea was to lay a basis for proving that he had turned the water upon this land and thus claim a priority of use for this surplus water. The court held, however, that this was not a beneficial use and that a subsequent appropriator of water from the same stream who had put the water to use for the raising of crops had a better right to this excess water, and, therefore, his efforts to preserve a right to this water without actual beneficial use very properly resulted in failure. The records of the courts are full of efforts made by parties who posted or filed notices of appropriation and who, in order to preserve them, carried on a perfunctory compliance with the law. When the test finally came, these men strained every effort to preserve the right which they claimed under this seeming compliance with the law.

The law requires that the work of construction shall be commenced promptly after the claim to water is initiated and shall be carried diligently to completion. It is a common thing to find that after the notice of claim has been posted the claimant will do a small amount of work at or near the point of diversion and perhaps keep one or two men at work at odd times for several months or even years, hoping in this way to be able to substantiate a claim of prompt beginning of construction and diligent prosecution to completion. He hopes at some future time, when trying to defend his rights against some appropriator of a subsequent date to be able to show that he had complied with the law although for a long period he had practically accomplished nothing toward putting the water to a beneficial use.

The legislatures and the courts have recognized this feature of the problem and it has practically always been the settled doctrine in the irrigation legislation of this country that no one could obtain an ownership in the water itself, but that at most he could acquire a right to the use of the water and that the control and regulation of this right must be in the public. Accordingly we find that the legislatures and the courts in all their dealings with these problems have undertaken to see that the water shall be so used as to produce the greatest benefit for the entire community.

The problem has been attacked in many different ways. The

laws and the decisions of the courts have developed the principle announced in the reclamation act, enacted by Congress and approved June 17, 1902, that "beneficial use shall be the basis, the measure and the limit of the right." It has been pointed out that this statement is not exactly accurate, because as every one must admit, the basis of the right to the use of water is the ownership or occupancy of land, while the measure of the right and its limit must be beneficial use. In some state legislation there is an attempt to fix an absolute limit to the right to water for beneficial use on land by stating the amount which shall be the limit granted for an acre of land. This limit, of course, is stated sufficiently large to include all forms of agriculture and must necessarily allow too great an amount for some crops and is thus rather a rough approximation to the end to be desired. However, it is a rule which is of value to the courts and at the same time permits a general regulation of the matter by fixing a limit beyond which no one can claim a right.

Where the right to the use of water depends upon beneficial use no water can be beneficially used if it is so applied to lands as to be wasted. Accordingly, some states have passed laws to prevent the wasteful use of water and the courts, as a matter of law and to protect the rights of the public, have decided that a man could not be permitted to waste water and that his rights must be diminished to the extent of any wasteful use which may be proven.

Adjudication of Water Rights

Another problem which has arisen from the use of water is that of determining the right of each individual user. The theory of our English common law is that when a man feels himself aggrieved by the action of another he takes the proper steps to have him brought into court, and upon the evidence adduced by each the court decides their respective rights. This proceeding, however, becomes practically impossible for the determination of water rights.

It is manifest that if A and B are in controversy about their rights and the court decides that A has a better right to a particular amount of water for a particular area of land because of his priority of beneficial use over B, we still find ourselves unable to determine what may be the right of C who may, in fact, have a right superior to both. That a court should undertake to determine the rights of A and B and to apportion the waters of a stream between them, dis-

regarding a fact known to both litigants, and perhaps also to the court, that C has a better right to the use of the waters of the stream than either is a situation which, one would think, could not possibly arise among rational beings. Yet we find that this condition existed for many years in many jurisdictions in the West, and does in fact continue to exist in some.

Manifestly, there is only one way in which the rights of several users of water from the same stream can be determined, and that is by bringing them all into court and having them all show their respective claims to the use of water, whereupon their rights may be determined with some knowledge of the amount of water claimed and the amount available for division among them. In some jurisdictions the courts have undertaken to bring all parties involved in a water suit into the court at the same time, but in most cases it has remained for the legislature to take up the question and to provide means for bringing together all parties interested in the use of the waters from some particular stream or stream system. Such a plan must involve many complications, and special means must be adopted to reduce to a minimum the amount of testimony and the expenditures which must devolve upon each individual who is brought into court in order to protect his rights as against all other appropriators on the stream.

The customary method in litigation would be for each person to bring his own witnesses as to all the facts on which he bases his claim; but it would involve interminable duplication and great expense if each claimant introduced evidence to show the basis of his own claim, his priority to each other claimant, and the amount of water which he claimed to be available for all. Especially would this be the case if the representative of each claimant were permitted to cross-examine the witnesses for every other claimant. Therefore, in most of the states the office of state engineer has been established, whose duties require him to gather all the physical data as to water supply, areas of land irrigated, dates of claims, etc., so that these matters of expert measurement or of record may be brought together by a single agency, and there may be an avoidance of the duplication of effort and expense which would be involved if each individual were to bring the same data to the attention of the court.

When these data have been gathered by the state engineer, he

is required in some jurisdictions to digest them and deduce from the facts so gathered the respective rights of the parties, and in fact to make a preliminary determination of the rights of all parties concerned. The parties whose interests are involved are then permitted to appeal from the decisions of the state engineer to the court so that the same question may be tried by the judicial tribunal and determined in the usual way by the court. Where the amount of water available is sufficient for the needs of all parties concerned, there would usually be very little ground for objection to the decision of the state engineer; and in the sections where there is no scarcity of water, this method of adjudication works satisfactorily.

In order to secure the full benefit of these adjudications whether by state engineer, or by the courts, steps must be taken to regulate and control further appropriations of water. The legislature, therefore, provides that no one may acquire a right to the use of water from a stream except by making application to the state engineer, who must examine the petition and determine whether there is unappropriated water available for the use of the applicant. If he finds that there is no unappropriated water available, he rejects the application and the applicant is permitted to appeal to the court if he desires, and have the question judicially determined. Such legislation as this will prevent the unfortunate condition which has arisen in many states where the claims of record are greatly in excess of the actual water available and where the mere fact that a claim to the use of water is of record has been used to float enterprises causing great money loss to innocent investors because the rights claimed do not in fact exist.

Water Appurtenant to Land

The rule that the right to the use of water depends upon beneficial use has necessarily evolved another principle—namely, that the right to the use of water once established for a particular tract of land must remain attached to it; or, to use the legal term, the right to the use of the water is appurtenant to that particular tract.

It would be immaterial to B if A, who has a right superior to his, should use his water upon one particular tract, or upon another, unless A's change from one tract to another should affect the amount of water which B could obtain under his junior right. B's right in such a case would be affected in several different ways: A change

in the use of the water from one point to another might involve also the use of a larger quantity of water in order to secure the proper cultivation of the land. This naturally arises from the different characteristics of different soils. The most important need for making the water appurtenant to a particular tract of land arises from the fact that the use of water upon lands usually results in the return to the stream of a large amount of the water so used.

In applying water to lands for the cultivation of crops we may regard the body of the water as disposed of in four different ways: (1) a considerable amount evaporates directly from the earth into the air; (2) of the portion which percolates into the ground a certain amount is taken up by the vegetation and incorporated into the plant life; (3) a certain amount passes away, percolating through the soil and finally reaching some water course; (4) the remainder sinks into the soil for an indefinite distance, and we are not able to state what becomes of it.

In nearly all cases a large proportion of the water returns to the water course. This seepage or return water naturally reinforces the amount of water available for the appropriators lower down upon the stream, and to deprive the lower appropriator of this return water may mean to him the loss of all or a great part of the water to which he is entitled. A change in the place of use could materially affect the amount of return water available for the appropriators lower down upon the stream, who may be either prior or subsequent to the other in right.

There are other ways in which a change in the place of use would affect the water supply in the stream. It might cause the water to return to the stream at a different season than it would return from the other tract of land, due to the different characteristics of the soil as to permeability.

The doctrine of appurtenance must be maintained to secure, as nearly as possible, a continuance of the condition upon which the appropriators from the stream lower down depend for the fulfillment of their own rights. In other words, the stream is to be maintained as nearly as possible in the condition in which each successive appropriator found it at the time of initiating his right.

Doctrine of Appropriation and Riparian Rights

The doctrine of appropriation of water for beneficial use and the doctrine of riparian rights are largely, if not entirely, antagonistic. Nevertheless, the conservatism of legislatures and courts has caused California and other states to try to maintain the doctrine of appropriation and of riparian rights in the same vicinity and in fact upon the same stream. This has happened because in California and Washington, and also in some of the states along the eastern edge of the arid region, a considerable area is sufficiently humid not to require irrigation for the practical production of crops. The riparian doctrine being older and being the one recognized by the common law from which the statute law of the country has been developed, was recognized as superior to the needs developed in the arid section of the states. In the beginning, the arid section was of small importance; its needs have impressed themselves upon the legislatures and the courts only as the result of an increase in population and an increase in importance arising from gradual development.

The problem must, of course, be met in each state, and must be worked out in its own way. The experience of the state of Nevada is perhaps interesting, as showing the manner in which these matters are often worked out. In 1866 the Supreme Court of the State of California decided the well-known case of *Lux vs. Haggin*, in which the court recognized the rights of the riparian owner as superior to the rights of an appropriator, based upon subsequent ownership of land though earlier in use of water. The Supreme Court of the State of Nevada, in 1872, in the case of *Vansickle vs. Haines* adopted the doctrine laid down in this case, and it was the law of the state for some thirteen years. Finally, however, the conflict was presented to the court in a different form, in the case of *Jones vs. Adams*, decided in 1885, and a careful review was given to the entire question. As a result the Supreme Court of the State of Nevada decided that the doctrine based upon riparian rights was not in any manner applicable in that state; that it was entirely unsuited to the conditions existing in that state, and therefore never was and never could be the law for that jurisdiction. The court accordingly reversed itself and overruled the former decision.

In some of the other states, where large areas of the states are humid or semi-arid and where the importance of irrigation has not been felt until recent years, the courts have attempted to apply the doctrine of riparian ownership to the arid sections of the states, involving necessarily a number of important modifications in the original conceptions arising from that principle. These were carried along by the courts from year to year until finally the importance of the irrigation interests demanded a careful study of the situation and an attempt to apply the law in such a manner as to foster the development of irrigation. The riparian doctrine was then thoroughly scrutinized and its inapplicability to the conditions of the state is so fully recognized that the courts find it necessary to get away from the former doctrine and to adopt the principles demanded by the development of the arid section of the state.

This progress in legal interpretation must, necessarily, be based upon the principle that no system of law shall be applied in any country where the results are such as to prohibit or interfere with the development of civilization. We, therefore, find the State Supreme Court of Oregon, in a recent case known as *Hough vs. Porter*, deciding that the riparian doctrine of water rights is not applicable in that state, for in a large part of its area water is necessary for the proper cultivation of agricultural crops.

In some of the other states, where the doctrine of riparian rights is still recognized as effective in sections where irrigation is necessary for the production of crops, there has been greater or less modification in the principles applied. There is no doubt that ultimately, as the irrigation interests assume greater importance, the courts must necessarily recognize the fact that the law must not stand in the way of necessities of the community, and that the court must find one means or another so to modify their rulings as to foster the natural line of development upon which the community must depend.

Water for Electric Power

The reclamation act was not drawn by any one individual, but was the result of the labors of many persons both in and out of Congress who were familiar with the conditions of the arid region. The act, therefore, embodies the two general principles to which reference has been made, viz., that beneficial use is the basis, meas-

ure and limit of the right to the use of water, and that the right to the use of water is appurtenant to the land irrigated thereby. The act applies to the use of all methods of applying water to lands, provides for raising water to high levels by means of pumping, and also incidentally recognizes the use of electric power for such purpose.

In connection with many irrigation projects, the opportunity to develop electric power by means of water has made it practicable to extend greatly the area which can be irrigated. On the other hand, the diversion of the water from the stream, or the storage of water, has created opportunities to develop electric power not needed for irrigation purposes. Whenever it is possible to develop electric power in connection with, but not needed for, the irrigation of land, this power should be used for commercial purposes. Such surplus power will be of great value in aiding the development of the community. Aside from its availability for domestic and agricultural operations on the farm itself, it will be useful in connection with factories depending directly upon agriculture, such as beet-sugar factories and canneries. In many communities there may be opportunities for miscellaneous manufactures which will be established wherever a surplus power opportunity is available.

Electric power furnishes an opportunity for the cheap transportation of passengers and freight, and is a great factor in bringing the individual farmers in closer contact with each other, with other farming communities and with the cities. It is thus a very important element in the improvement of the conditions of human life, both in the city and in the country.

This use of the water for the development of electric power in connection with an irrigation system should not, however, be allowed for commercial purposes independent of irrigation. It is, therefore, essential that the use of water for developing electric power must be under the control of the same agency that has supervision over the irrigation enterprise. This gives rise to another problem in connection with reclamation, and that is the control of the relations between the hydraulic development of electric power for commercial purposes and the utilization of the water supply for irrigation.

The necessities of electrical power for commercial purposes are such that it can be used to advantage only in those cases where a certain amount of power can be depended upon throughout the

entire year. This, of course, is not always possible in connection with the use of water for irrigation; because the water supply for irrigation, which is drawn upon only during the growing season of the year, must be stored and not allowed to pass down the stream in the non-irrigation season. The state laws and the decisions of the courts should recognize the relative necessities of the community for irrigation and for power, and the laws should permit of such adjustments of the use of water for the two purposes as will best serve the needs of the community.

In this connection it may be stated as a general proposition that the power possibilities when existing below the points of diversion for irrigation purposes are likely to interfere seriously with the use of the water for irrigation, because it is necessary to let the water supply pass down the stream to be utilized by the power plant instead of diverting this water for irrigation purposes. On the other hand, when the water power is developed at a point above the place where it is used for irrigation, it will often be an aid in the irrigation use of water, as the needs for power require a regulated stream, and thus the low water supply is increased by the water held over from the high-water periods, which are usually in the non-irrigation season.

The development of hydro-electric power presents an excellent opportunity for monopoly, and much has been accomplished in this direction by some large corporations that have taken advantage of the lack of regulation to secure enormously valuable rights at little or no expense. The State of Oregon has, by recent statute, taken the lead in the regulation of the use of water for power purposes by providing that the right shall be subject to a nominal charge, that it shall run only forty years and be subject to renewal under such conditions as the legislature may prescribe.

Much yet remains to be done to solve the problems connected with the reclamation of lands and the use of water for irrigation and power, but the general attitude of the communities of the arid region promises steady progress toward a wise solution of these complex questions.